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July 11, 2002

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**Subject: Draft Fugitive Dust Work Plan for the Yerington Mine Site**

Dear Art:

Pursuant to the approved Closure Scope of Work (SOW), Atlantic Richfield Company has prepared the attached Draft Fugitive Dust Work Plan for the Yerington Mine Site, located in Lyon County, Nevada. The document was identified in the SOW as a submittal to be delivered to the Yerington Technical Work Group (YTWG) for review by July 29, 2002. Per the YTWG's request, we have prepared this draft document approximately 18 days in advance.

If you have any questions regarding the draft Fugitive Dust Plan, please call me at 1-406-563-5211 ext. 430.

Sincerely,

Dave McCarthy
Project Manager

cc: Bonnie Arthur, SFD-8-1, USEPA Region 9
Brad Shipley (BLM)
Tad Williams, Walker River Paiute Tribe
Robin Bullock, Atlantic Richfield Company
John Krause, Bureau of Indian Affairs
Stan Wiemeyer, U.S. Department of the Interior, Fish and Wildlife Services Division
Todd Normane, BP, Legal Western Region
Vicki Roberts/Johanna Emm, Yerington Paiute Tribe
Elwood Emm, Yerington Paiute Tribe
Paul Thompsen, Office of Senator Harry Reid
Phyllis Hunewill, Lyon County Commissioner
Joe Sawyer, SRK Consulting

DRAFT

# FUGITIVE DUST WORK PLAN
# YERINGTON MINE SITE

**July 11, 2002**

**Prepared For:**

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**Prepared By:**

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# SECTION 1.0
# INTRODUCTION

Atlantic Richfield Company (Atlantic Richfield) has prepared this Draft Fugitive Dust Work Plan (Work Plan) to conduct phased investigations that will support an evaluation of the potential risk to human health and the environment that may result from fugitive dust generated by mine surface units and process areas at the Yerington Mine Site. Fugitive dust emissions from the mine will be evaluated using one or more strategically-placed air quality monitoring stations at the site. Monitoring results will be evaluated in the context of Nevada Division of Environmental Protection (NDEP) regulations for air quality. This Work Plan is being conducted pursuant to the closure investigations described in the Closure Scope of Work (SOW).

The remainder of Section 1.0 of this Work Plan describes the location and topographic setting of the Yerington Mine site and how this setting may influence fugitive dust. Section 1.0 also presents previous monitoring and analytical results from NDEP (1994) and related information. In addition, this section, describes Work Plan data quality objectives. Section 2.0 presents information about potential sources, pathways, and receptors of fugitive dust (i.e., Site Conceptual Model for fugitive dust). Section 3.0 presents the proposed initial sampling location, how measurements of fugitive dust will be taken, and sampling and analytical protocols for fugitive dust analyses. In addition, Section 3.0 of this Work Plan presents a task-specific Job Safety Analysis in the context of a more comprehensive Health and Safety Plan. Section 4.0 lists references cited in this Work Plan.

## 1.1 Location

The inactive Yerington Mine Site is located approximately one mile west of the town of Yerington in Lyon County, Nevada (Figure 1). The site includes an open-pit mine (partially filled with a pit lake), areas of waste rock, tailings, process ponds and leach pads. Various buildings, structures, and miscellaneous disturbances associated with mining operations also occur at the site. The area of the mine units and related disturbances shown in Figure 2 total approximately 2,892 acres. The remaining approximately 108 acres are undisturbed.

The Yerington Mine Site is located in Mason Valley and the Mason Valley hydrographic basin (no. 108) within the Walker River watershed. Agriculture has been the principal economic activity in Mason Valley (principally hay and grain farming, with some beef and dairy cattle ranching). In addition to agriculture, historic and recent mining activities have added to the area's economic base.

### 1.2 Topography and Climate

Topography and climate in the area of the Yerington Mine site are important factors in the amount, location and timing of fugitive dust generation, dispersion and deposition. Huxel (1969) summarized the geology and hydrology of the Mason Valley, which includes the mine site and the surrounding area. Mason Valley covers about 510 square miles and is bounded on the east by the Wassuk Range, on the north by the Desert Mountains, on the west by the Singatse Range, and on the south by the Pine Grove Hills.

The Yerington Mine Site is located on the west side of Mason Valley, a structural basin surrounded by the mountain ranges described above. The area is typical of basin-and-range topography. The mountain blocks are primarily composed of granitic, metamorphic and volcanic rocks with minor amounts of semi-consolidated to unconsolidated alluvial fan deposits. The Singatse Range contains mineralized bedrock, as evidenced by the large copper porphyry ore deposit at the Yerington Mine. Other previously mined and disturbed areas occur in the Singatse Range, including the Bluestone mine, which may also contribute to fugitive dust in the area. Copper ore production from the Bluestone mine principally occurred from 1917 through 1920 (Moore, 1969).

Unconsolidated alluvial deposits derived by erosion of the uplifted mountain block of the Singatse Range and alluvial materials deposited by the Walker River fill the structural basin occupied by Mason Valley in the vicinity of the mine site. These unconsolidated deposits, collectively called the valley-fill deposits by Huxel (1969), comprise four geologic units: younger alluvium (including the lacustrine deposits of Lake Lahontan), younger fan deposits, older alluvium and older fan deposits. Lake Lahontan lacustrine deposits appear to have been removed and reworked by the Walker River as it meandered back and forth across the valley Huxel (1969). Huxel estimated that Pleistocene Lake Lahontan in Mason Valley persisted for a relatively short time and was less than 60 feet deep.

Huxel (1969) summarized the climate of the Mason Valley area as arid to semi-arid. Precipitation generally occurs as winter snows in the mountain blocks, and summer thundershowers both on the mountains and valley floor. Precipitation averages 20 inches in the mountains and 5 inches on the valley floor. Huxel (1969) cited an evaporation rate of approximately 4 feet, and described prevailing winds and storm trajectories that cross the valley as being generally from the west. The estimated pan evaporation rate for the site is about 37 inches per year based on data from Fallon, which has a similar climate (Piedmont Engineering, 2001). The precipitation and evaporation data indicate a strongly net evaporative water balance for the valley floor and lower alluvial fan areas where the Yerington Mine site is located.

### 1.3 Previous Monitoring and Assessments

NDEP performed $PM_{10}$ monitoring in June, July and August of 1994 at two locations: 1) on top of the sales-office building at Weed Heights; and 2) on top of a garage on the frontage road east of the sulfide tailings pile (exact address unknown). $PM_{10}$ monitoring results showed values below the EPA's national ambient air quality standards (NAAQS) for a 24-hour period (150 ? g/m$^3$). Samples were also collected for sulfate and copper extractions with results of 0.4669 ? g/m$^3$ and 0.0496 ? g/m$^3$ respectively. Data from NDEP's 1994 monitoring activities are provided in Appendix A.

Air quality monitoring data collected from 1996 to 1998 by the NDEP from a location near Fort Churchill Power Plant (approximately eight miles to the northeast of the Yerington Mine Site) are also provided in Appendix A. These data indicate that all $PM_{10}$ measurements are well below the EPA 24-hour standard of 150 $\mu$g/m$^3$.

McGinnis and Associates (McGinnis) conducted air quality investigations for the Yerington Paiute Tribe Reservation and Colony in 2001. They noted the lack of local meteorological data for the Yerington area, and primarily used meteorological data collected at the Fort Churchill power plant from 1996 to 1998 to describe the atmospheric conditions in the Mason Valley. The Fort Churchill data was compared with a number of National Weather Service (NWS) stations such as Reno, Winnemucca, Tonopah, Dead Camel and Como.

Based on this comparison, McGinnis concluded that the Dead Camel data could be used to represent long-term climatic conditions in the northwestern part of Mason Valley. Wind speed and direction data compiled in this report varied greatly between stations, making it difficult to determine a predominant wind direction. Mcginnis used a "Superfund Procedure" to estimate the amount of $PM_{10}$ emissions from the mine site. Due to the lack of local meteorological data and varied regional data, it was noted that only a rough estimate could be made of the potential emissions. McGinnis also listed the following emissions sources in the Yerington area:

- Fugitive dust emissions from mobile sources on unpaved roads;
- Emissions from industrial processes: mining and quarrying;
- Fugitive dust emissions from mobile sources on paved roads
- Emissions from miscellaneous area sources: agricultural production – livestock, beef cattle feedlots;
- Emissions from waste disposal, treatment, and recovery (open burning, residential); and
- Emissions from other industrial processes (construction, wind erosion).

In April 2001, a site visit to the Yerington Mine was conducted by the Engineering Technical Support Center (ETSC, a part of the Office of Research and Development of the U.S. Environmental Protection Agency). During the site visit, the potential for airborne transport of contaminated tailings areas was examined. ETSC determined that the potential for wind suspension of contaminated tailings was relatively low at the time of the inspection for the following reasons: 1) all of the tailings piles exhibited a highly cemented surface aggregate; 2) all of the dry tailings ponds, except for one, had a 0.6 cm thick crust that was not easily crumbled between fingers. The one area that was noted to lack a crusted surface contained about 50 percent fines, which could be suspended by wind.

ETSC also noted that relatively high wind speeds would be required for dust suspension due to a high coverage of non-erodible elements (0.5-1cm) on the surface of this pond. A red dusty area, known as the “iron bleed tailings” and located in the Oxide Tailings area, may have been a source for airborne contamination in the past, but has recently been capped by NDEP with a well-compacted and cemented material (oxide or “vat leach” tailings).

Atlantic Richfield recently installed a meteorological station at the northeast corner of the evaporation pond area (Figure 2) to support the air quality monitoring proposed in this Work Plan. Wind speed and direction data collected from this station between May 6 and June 12, 2002 indicates a predominant wind direction with relatively low wind speeds to the south and southwest with less frequent but stronger winds blowing to the northeast (Figure 3). Moderate wind speeds, usually below 5.4 m/sec (12 mi/hr), are associated with winds blowing to the south and southwest. In contrast, much stronger winds with speeds greater than 11 m/sec (24 mi/hr) are associated with winds blowing to the east and northeast. These data are similar to those summarized by McGinnis and Associates (2001) using regional weather data. Periods of high wind speeds are most likely to be associated with potential fugitive dust emissions from the site.

### 1.4 Data Quality Objectives

The Data Quality Objectives (DQOs) for phased field sampling and analytical activities described in this Work Plan include the collection of appropriate data to support the:

- Assessment of ecological and human health risk resulting from potential transport of fugitive dust being to possible downwind receptors, and identification of such receptors;
- Development of closure alternatives for surface mine units at the Yerington Mine site that may source fugitive dust.

Data collection proposed in this Work Plan will be consistent with the NDEP – Bureau of Air Quality Monitoring Guidelines provided as Appendix B. In order to ensure that data of sufficient quality and quantity are collected to meet the project objectives, a four-step DQO process was used to develop this Work Plan:

- Step 1. State the Problem;
- Step 2. Identify the Decision;
- Step 3. Identify the Inputs to the Decision; and
- Step 4. Define the Boundaries of the Study.

The problem statement (Step 1) is as follows: "The inactive Yerington Mine Site, including the various mine units and process areas contained within it, may potentially contribute to fugitive dust emissions in the Mason Valley area given appropriate meteorological conditions. Fugitive dust from the site with elevated constituents of concern (COCs) may pose a risk to human health and the environment through direct inhalation, or by the ingestion of soils where previous deposition of fugitive dust containing COCs have accumulated.

Step 2 of the DQO process (Identify the Decision) asks the key question that this Work Plan is attempting to address: "What monitoring, sampling and analytical activities for locations at the Yerington Mine will serve to evaluate the potential risk to human health and the environment, and support the development and evaluation of closure activities at the Yerington Mine site?" The field monitoring and sample collection and analysis activities proposed in this Work Plan will be compared to previous investigations (NDEP, 1994). The criteria necessary to determine if the proposed Work Plan activities will answer this question include:

- Will the collected data adequately document potential transport of fugitive dust and COCs from the Yerington Mine site, to potential downwind receptors; and
- Will the collected data support the development of site closure activities for the mine site.

Step 3 of the DQO process (Identify the Inputs to the Decision) identifies the kind of information that is needed to address the question posed under Step 2. Relevant information includes local meteorological data, identification of other upwind or downwind emission sources that may contribute to fugitive dust in the area, previous field monitoring and analytical results, proposed field monitoring and analytical results (described below), and the identification of potential downwind receptors and areas where fugitive dust may accumulate.

The information to be obtained from the proposed field monitoring and sample collection and analytical activities will provide an adequate basis to satisfy these criteria. A phased air quality monitoring approach will establish the potential need for additional air quality monitoring locations. Integration of approximately one year of air quality monitoring with a similar period of meteorological data collection at the Yerington Mine Site will provide important information that is necessary to meet the DQOs listed above .

The proposed field monitoring, sample collection and analytical activities, described in detail in Section 3.4, consist of the following:

- Collection of $PM_{10}$ (particulate matter of 10 microns or less in size) monitoring samples at 6-day intervals from an appropriate (downwind) air quality monitoring location at the Yerington Mine;
- Analysis of collected samples for potential COCs using X-ray fluorescence (XRF) or other appropriate analytical techniques; and
- Continued collection of climate data from the recently installed meteorological station on the Yerington Mine site.

As part of other site investigation activities described in the SOW, Atlantic Richfield will be collecting grain size data of surface materials to assist in the evaluation of closure alternatives for surface mine units, and to identify appropriate cover materials. These grain size data will be integrated with the meteorological and air quality data to evaluate the potential for fugitive dust generation from the mine site in the Final Permanent Closure Plan.

Step 4 of the DQO process (Define the Boundaries of the Study) defines the spatial and temporal aspects of the field monitoring, sampling and analytical activities proposed in this Work Plan. Location of the proposed air quality monitoring station along the north side of the sulfide tailings area (Figure 4) will be downwind of the mine units likely to generate fugitive dust. Based on the fine-grained nature of the sulfide tailings materials, this surface mine unit has the greatest potential to generate fugitive dust. This general area was selected based on the lack of nearby structures that may interfere with air quality monitoring. The precise monitoring location will be determined based on a more detailed site inspection and logistical considerations such as vehicular and power access. $PM_{10}$ data combined with meteorological data collected at the mine site will establish the information necessary to meet the objectives, or provide the basis for additional data collection and investigations of the potential for fugitive dust to pose a human health or ecological risk.

The field and analytical activities described in this Work Plan are anticipated to begin in 2002 immediately after approvals have been granted by regulatory agencies. It is anticipated that air quality monitoring (sampling and analysis) and meteorological data collection will be conducted for approximately one year prior to the creation of a Data Summary Report

# SECTION 2.0

# POTENTIAL SOURCES, PATHWAYS AND RECEPTORS

## 2.1 Potential Sources

The Yerington Mine Site has a history that dates back to the early 1950s. The Anaconda Mining Company produced copper from the Yerington Mine from 1953 to 1978. Sulfide copper ores were milled and copper was recovered as concentrate from a flotation circuit. Sulfide tails were placed in a large raised tailings impoundment. Spent solutions and brines from the oxide ore precipitation process were placed in large lined and unlined evaporation ponds located in the northwest part of the property. Oxide ores were processed by leaching with sulfuric acid. High-grade ores were crushed prior to leaching in large vats. The spent ore was removed from the vats and placed in a large dump known as the oxide vat-leached tailings (VLT) dump. This material is granular and appears to be generally smaller than 0.375 inches in particle size. From 1978 to 1988 miscellaneous mining, milling, and heap leach recovery operations were conducted on the property by Mr. Don Tibbals. In 1989, Arimetco International took over operations at the mine and constructed four lined leach pads at various locations.

The result of mining and ore processing activities at the Yerington Mine led to the creation of a number of mine units and process areas (Figure 2). These mine units and related surface disturbances can be considered as potential sources of fugitive dust emissions. A list of the various mine units and process areas are as follows:

<u>Tailings Impoundments:</u>

- Sulfide Tails
- Sulfide Dump Tails
- Oxide Tails

<u>Waste Rock Areas:</u>

- Waste Rock Area (North)
- Waste Rock Area (South)

Evaporation Ponds:

- North, Middle and South Lined Evaporation Ponds (dry)
- Unlined Finger Evaporation Ponds A-E (dry)
- Unlined Evaporation Pond (dry)
- Pumpback Evaporation Pond (wet, currently used for water management)

Leach Pads:

- Phase I Heap Leach Pad
- Phase II Heap Leach Pad
- VLT Heap Leach Pad
- Slot Heap Leach Pad

Other Site Disturbances:

- Roads
- Plant Area (including process areas)
- General Disturbance

Figure 4 combines the surface mine units shown in Figure 2 with the wind rose diagram presented in Figure 3, and facilitates an understanding of predominant wind directions relative to the existing site features. Some mine units may have a greater potential to contribute to fugitive dust emissions than others due to location, local topography and/or grain size of surface materials. As noted previously in Section 1.3, the ETSC report concluded that the majority of tailings areas do not have the potential to contribute to fugitive dust emissions due to the presence of cement-like and crust-like surfaces found on the majority of the mine units. The one exception noted by ETSC was an area formerly used for evaporation purposes in the Sulfide Tailings area. Additionally, an area that may have contributed to past fugitive dust emissions was the "red dust area" that, as described in Section 1.3, has recently been covered by NDEP with a non-erodible cap to prevent fugitive dust emissions.

The inactive Blue Stone Mine, located approximately four miles southwest of Yerington (Figure 2) and generally upwind from the Yerington Mine site, may contribute fugitive dust to downwind areas. Other possible sources of fugitive dust in the area of the mine site include agricultural activities, residential emissions from wood/coal burning, and the local roadway system. Areas outside of Mason Valley that are upwind of the mine site may also contribute to fugitive dust emissions in the Yerington area.

## 2.2 Potential Pathways and Transport Mechanisms

The relationship between the potential mine site sources, potential pathways and potential receptors is schematically presented in Figure 5. This flow diagram is part of the Conceptual Site Model currently under development for the Yerington Mine Site. Media pathways shown in Figure 5 include fugitive dust and soil. COCs in surface mine units and exposed soils at the mine site could potentially be released to the environment through wind erosion and atmospheric dispersion as fugitive dust. Fugitive dust has the potential to come into direct contact with downwind receptors or be deposited at downwind locations. Accumulated COCs have the potential to be re-suspended by wind and transported further downwind, be leached into the surrounding soil during periods of heavy precipitation, or be eroded into surface water. COCs leached into soils may have the potential to migrate into shallow groundwater .

## 2.3 Potential Receptors and Exposure Routes

Potential receptors of fugitive dust and COC's include humans (e.g., workers, visitors and residents) and ecological (terrestrial biota). Routes of exposure to ecological receptors include the ingestion of soils and surface water where fugitive dust and COCs have accumulated. Potential exposure routes to human receptors include:

- Inhalation of fugitive dust;
- Ingestion of COCs in soils deposited from fugitive dust; and
- Ingestion of COCs in ground and surface water where COCs deposited by fugitive dust erosion have accumulated

# SECTION 3.0
# WORK PLAN

Atlantic Richfield proposes to conduct air quality monitoring consistent with the State of Nevada Bureau of Air Quality (Ambient Air Quality Monitoring Guidelines, 2000 http://ndep.state.nv.us/baqp/monguide.html) that will focus on $PM_{10}$ emissions, and metals concentrations in the fugitive dust, that may be transported to the northeastern margin of the mine site. Due to the inactive status of the mine site, and based on the ETSC observations described above, it is anticipated that only "relatively coarse" particles derived from geologic materials will have the potential to erode and contribute to fugitive dust. The EPA considers such particles to be from 2.5 to 10 microns in diameter. These particles usually come from sources of windblown dust from unpaved roads agricultural fields, and desert. "Relatively fine" particles, those less than 2.5 microns in diameter, are primarily the result of industrial and residential vehicle exhaust and combustion (EPA, 1997). Fugitive dust resulting from the geologic materials expected to be suspended by relatively high winds at the Yerington Mine Site will likely be composed of constitutes at least 50 percent of $PM_{10}$ and between 5 to 15 percent of $PM_{2.5}$ (Chow and Watson, 1998). Atlantic Richfield proposes to synthesize the meteorological air quality data collected over a 12-month period to evaluate the effects of $PM_{10}$ emissions and possible COCs on human health and the environment in a Data Summary Report.

## 3.1 Proposed Monitoring

As part of the phased approach to air quality monitoring at the site, Atlantic Richfield proposes to install $PM_{10}$ sampling equipment at the northern margin of the sulfide tailings area, as shown in Figure 4. The northern margin of the sulfide tailings area was selected based upon regional and local prevailing wind direction data and its position relative to the fine-grained sulfide tailings. The previously installed meteorological station is also shown in Figure 4. The data from this station will be used in conjunction with air quality sampling in order to assess the impact to air quality downwind of the Yerington Mine Site. With the collection of these and other important data (e.g., seasonal variations in wind direction and wind speed, particle size data from surface mine units, meteorological and air quality data collected at the Paiute Tribe Reservation) the need for additional monitoring will be evaluated, including the possibility of additional air quality monitoring stations at strategic locations around the site if the data warrants.

### 3.2 Data Collection and Analysis Procedures

The proposed air quality monitoring station and sampling program at the Yerington Mine site has been developed according to the NDEP -- Bureau of Air Quality Monitoring Guidelines, which are attached in Appendix A. The initial air quality monitoring location will consist of co-located $PM_{10}$ samplers operated from midnight-to-midnight once every sixth day according to the NDEP-recommended monitoring schedule, consistent with EPA guidelines.

Both samplers will be of the same type having the same inlet type and flow control ***modify***. They will be located at least two meters apart, but no more than 4. Inlets on both samplers will be between the range of 2 to 15 meters above ground and be at least 2 meters away from all structures possible obstructions to airflow. All calibrations, sampling and analysis will be conducted in identical manners for both samplers. One sampler will be designated as the official (primary) sampler and the other as the duplicate (secondary) sampler. Mid-volume sampling will be conducted with a flow rate of 113 L/min (4 $ft^3$/min). Teflon filters (47mm) will be used to facilitate XRF spectroscopy for metals analysis. For specific metals of interest not suitable for XRF analysis (e.g., beryllium), another analytical method will be used (see analyte list below). Data collected from the samplers will include the following:

- Sampler identification
- Run date
- Filter serial number
- Elapsed run time (minutes)
- Actual flow rate ($m^3$/min)
- Standard flow rate ($m^3$/min)
- Gross filter weight (g)
- Tare filter weight (g)
- Net weight (g)

- Particulate concentration (ug/$m^3$)

$PM_{10}$ filters will be weighed prior to and after sampling and after they have been allowed to equilibrate to temperature (between 15 and 30 °C) and humidity (20 to 45 percent) for 24 hours. An EPA-certified laboratory will perform the chemical analyses of the particulate matter collected on the filters on a quarterly basis. Particulate matter will be analyzed for metals using the X-Ray Fluorescence (XRF) Air Filter Analysis with the exception of beryllium, which must be analyzed using atomic absorption analysis. Appendix C presents a table of analytes and detection limits.

### 3.3 Quality Assurance and Quality Control

All procedures used for data collection and analysis will follow the specifications and procedures described in Section 3.2. These procedures will ensure that the type, quantity, and quality of data collected are reliable with regard to providing information needed to satisfy the DQO's listed in Section 1.4. Data collected from field and laboratory activities will be used to:

- Determine the air quality downwind of the Yerington Mine site;
- Evaluate local weather data and the effect of climatic conditions on air quality; and
- Evaluate the human health and ecological effects and of fugitive dust emissions.

The data collection and analysis procedures will adhere to quality assurance/quality control (QA/QC) methods to ensure that the quality and quantity of the analytical data obtained during field activities are sufficient to support the DQO's. QA/QC issues include:

- Detection limit and laboratory analytical requirements;
- Selection of appropriate levels of precision, accuracy and comparability for the data;
- Identification of confidence levels for the collected data;
- Sample handling issues; and
- Routine maintenance schedules for sampling devices.

The initial air quality monitoring station located along the northern margin of the sulfide tailings area

(Figure 4) will be equipped with co-located $PM_{10}$ samplers. The co-located samplers will be of the same inlet type and use the same method of flow control. They will be located at a distance between 2 and 4 meters from each other. Calibration, sampling and analysis of the co-located samplers will occur on the same schedule. One of the samplers will be designated as the official sampler and the other as the duplicate sampler. The official sampler will be used to report the air quality of the site and the duplicate sampler will be used to determine the precision of the measurement.

### 3.4 Site Job Safety Analysis

A site-specific Job Safety Analysis (JSA) is presented in Appendix D for the activities described in this Work Plan, in accordance with the Yerington Mine Site Health and Safety Plan (SHSP). The SHSP identifies, evaluates, and prescribes control measures for safety and health hazards, in addition to providing for emergency response at the Yerington Mine site. SHSP implementation and compliance will be the responsibility of the contractor, with Atlantic Richfield taking an oversight role. Any proposed change to the SHSP by the contractor will be reviewed by Atlantic Richfield Safety Representative Lorri Birkenbuel prior to its acceptance or incorporation into the SHSP. A copy of the SHSP will be maintained at the site, at Atlantic Richfield's Anaconda office, and at the contractor's office. The SHSP includes:

- Overall safety and health risk or hazard analysis;
- Task-specific JSAs;
- Employee training records;
- Personal protective equipment (PPE);
- Medical surveillance and hospital routes;
- Site control measures (including dust control);
- Emergency response; and
- Spill containment program

The SHSP includes a section for site characterization and analysis that will identify specific site hazards and aid in determining appropriate control procedures. Required information for site characterization and analysis includes:

- Personnel involved in each aspect of the work being performed;
- Description of the response activity or job tasks to be performed;
- Duration of the planned employee activity;
- Site topography and accessibility by air and roads;
- Safety and health hazards;
- Hazardous substance dispersion pathways; and
- Emergency response capabilities.

Contractors must provide proof of required training, as outlined in 29CFR 1910.120(e) and as stated in the SHSP. Required training, depending on the particular activity or level or involvement, will include MSHA 40-hour training and annual 8-hour refresher courses. Personnel will initially review the JSA forms prior to commencing tasks associated with the Fugitive Dust Work Plan. Site-specific training will be covered at this briefing, with an initial site tour and review of site conditions and hazards. Elements to be covered in site-specific training include: persons responsible for site-safety, site-specific safety and health hazards, use of PPE, work practices, engineering controls, major tasks, decontamination procedures and emergency response. Records of pre-task briefings will be attached to the SHSP.

The JSA for this Work Plan incorporates individual tasks, the potential hazards or concerns associated with each task, and the proper clothing, equipment, and work approach for each task. The following table outlines the tasks and associated potential hazards included in the JSA:

| SEQUENCE OF JOB STEPS | POTENTIAL HAZARDS |
|---|---|
| 1. Prepare and collect filters | • Dust inhalation |
| 2. Collect meteorological data. | • Electrocution |

| | |
|---|---|
| 3. All Activities | • Slips, Trips, and Falls |
| 4. All Activities | • Back, hand, or foot injuries during manual handling of materials. |
| 5. All Activities | • Heat exhaustion or stroke. |
| 6. All Activities | • Hypothermia or frostbite. |

# SECTION 4.0

# REFERENCES CITED

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